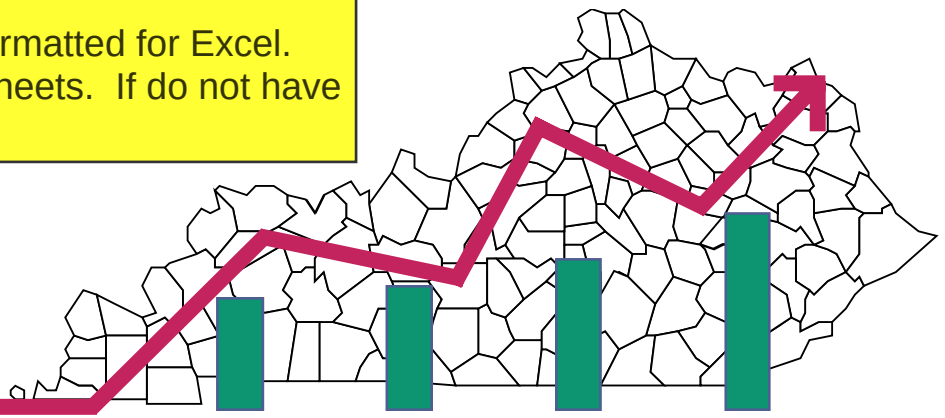



Kentucky's Forests 2004 Indicator and Trend Report

Kentucky Environmental Quality Commission Indicators Program … reporting on environmental and natural resource trends and conditions in the Commonwealth

EQC Recommends that you use Acrobat 6 to view this document. You can download a free copy of Acrobat 6 from Adobe at http://www.adobe.com/products/acrobat/readermain.html

EQC has embedded spread sheets in this document which are formatted for Excel. You will need Acrobat 6 and Microsoft Excel to view the spread sheets. If do not have Excel, you can download a free Excel Viewer from Microsoft.



Prepared by:
The Kentucky Environmental Quality Commission
September 9, 2004

Kentucky's Forests




Measures

Disclaimer - This report includes data and information supplied by several state agencies and sources. EQC acknowledges that in some cases data may be incomplete, not collected consistently from year to year or based on samples or models. Therefore, EQC notes that while measuring trends is an imperfect science, it is still a valuable tool from which to chart progress and problems. This report is intended to present data and information compiled from various public databases and studies and draws no specific conclusions or correlations between individual sources of pollution in Kentucky and impacts to children's health.

Kentucky's Forests



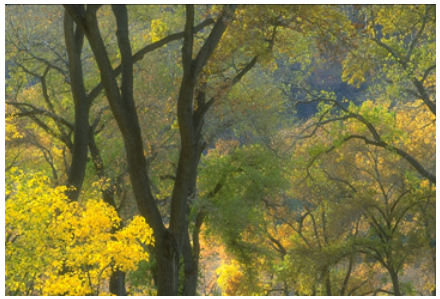

Forest Land Cover

Measure 1. Forest Land Cover Trends
Measure 2. Timberland Trends by Ownership
Measure 3. Timberland Trends by Region

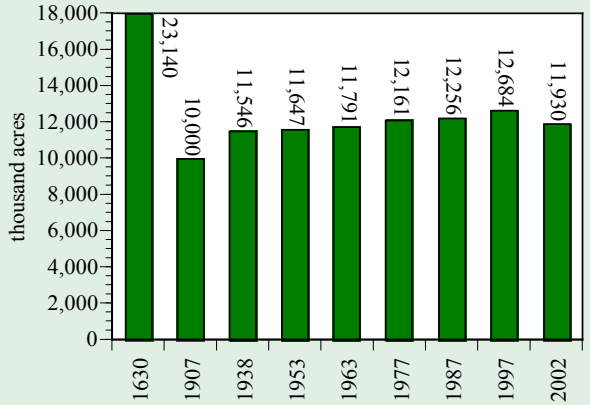
Kentucky's forestlands dominate our landscape, covering an estimated 11.9 million acres of land or 47 percent of the landbase. Forestland acreage had been increasing in the state during the past four decades, however, in 2002 forest inventory for Kentucky revealed that forest land acreage fell by 754,000 acres since 1997.[1]

Timberland in Kentucky, likewise, had been increasing during the past four decades, but declined by 724,000 acres between 1997 and 2002. Timberland is a subset of forestland and includes land that is capable of producing 20 cubic feet per acre of industrial wood per year. The greatest timberland acreage loses were seen in the Western Coalfields and Bluegrass regions of the state.

An estimated 306,800 landowners in Kentucky own 93 percent of the forestland acreage in Kentucky. The economic value of timber from our forests is significant, generating $3.7 billion in economic impacts and employing 36,400 Kentuckians. Forests also contribute to our economy in other ways.[2] The forest's effect on water quality, climate and recreational activities, its provision of wildlife habitat and biological diversity, combined with timber assets are strong incentives for sustaining healthy and productive forests in the Commonwealth.



Measure 1. Kentucky's Forest Land Cover Trends[endnote]



**Forestland is defined as at least 10% stocked trees of any size.*

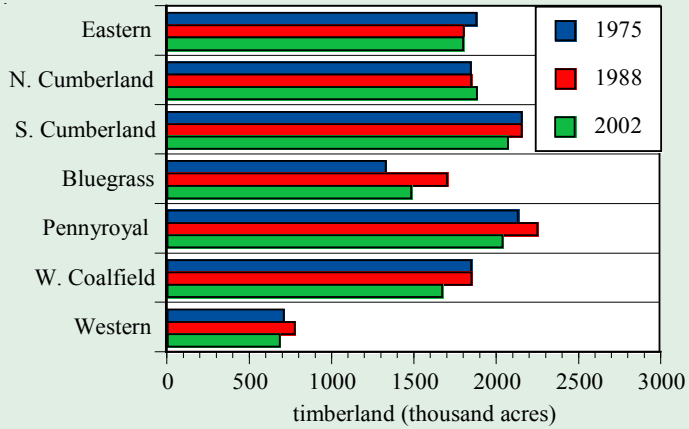
Measure 2. Timberland* Trends in Kentucky by Ownership[endnote]

	2002	1997	1987	1977	1963
All ownerships	11,623	12,347	11,909	11,902	11,497
- private	10,280	11,344	11,019	11,007	10,772
- public	1,058	1,004	890	895	725
- industry	285	205	205	255	308

Units in thousands of acres

**Timberland is a subset of forest land that is defined as capable of producing 20 cubic feet per acre/year of industrial wood in natural stands.*

Measure 3. Timberland* Trends in Kentucky by Region[endnote]



Kentucky's Forests




Measure 4. Timber Product Output Trends in Kentucky
Measure 5. Lumber Production Trends in Kentucky
Measure 6. Volume of Growing Stock on Timberland in Kentucky

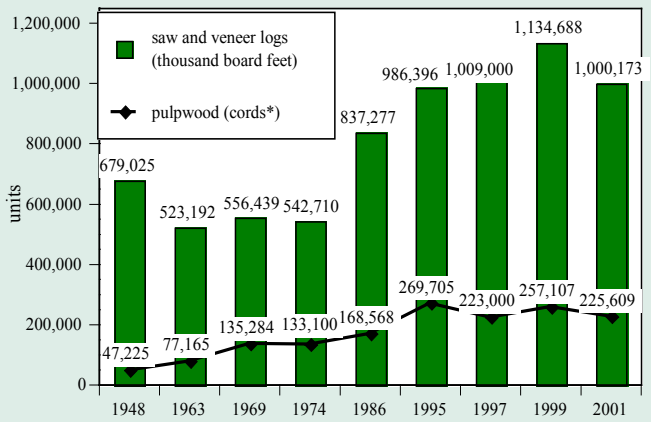
Timber Resources and Utilization

Kentucky's forests contribute significantly to our economic, social and environmental well-being. For example, timber and lumber production are, and always have been, a mainstay of the Kentucky economy. Timber output in Kentucky reached record levels in 1999, but dropped back to 1997 levels in 2001 due to the economic recession. This trend is likely to continue.[1]

With the advent of the sawmill after 1810, lumbering became one of state's most persistent heavy industries. By 1907, lumber production had peaked at 917 million board feet. That record was broken in 2000 when lumber production in Kentucky exceeded 1 billion board feet. Technological improvements at sawmills have elevated lumber production capacity in the U.S and Kentucky to these record levels.[2] Wood use efficiency rose 41 percent from 1952 to 1998 and was 9 percent higher in 1998 than in 1990.[3]

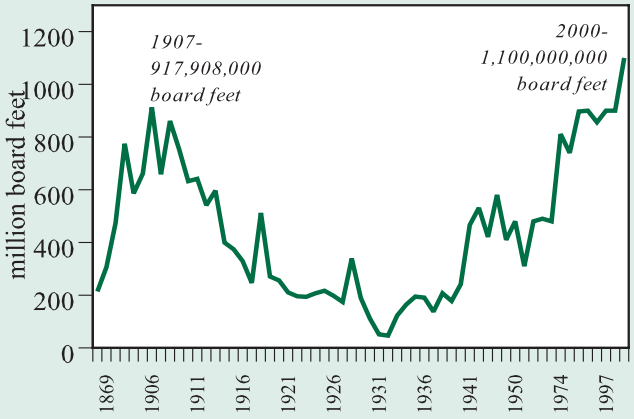
U.S. Forest Service data reveals that while timberland has declined, actual growing stock has increased during the past 4 decades. This increase in growing stock is consistent with forest sucession from seedling, sapling, poletimber to sawtimber. For example, in 1988, 58 percent of the timber stands were classified as sawtimber (above 15.0 inches diameter breast height) compared to 65 percent in 2002.[4]

Measure 4. Timber Product Output Trends in Kentucky[endnote]



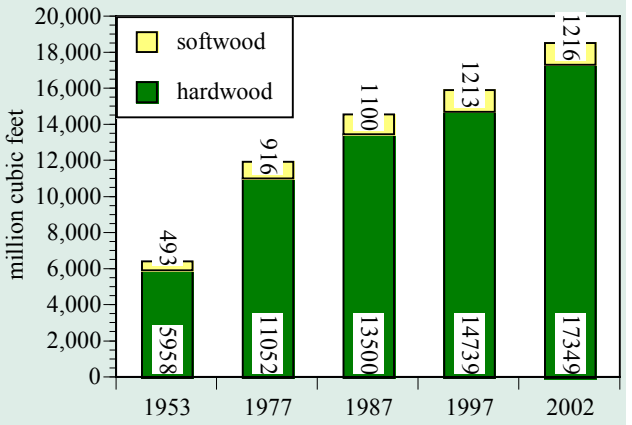
Based on mill outputs of Kentucky timber.

Measure 5. Lumber Production Trends in Kentucky[endnote]



2000 data most recent. Trend data does not take into consideration the increase in efficiency in lumber production.

Measure 6. Volume of Growing Stock on Timberland in Kentucky[endnote]






Timber Resources and Utilization

Measure 7. Delivered Log Prices in Kentucky
Measure 8. Veneer Log Price Ranges (2003)

Timber prices are useful indicators of market conditions as well as timber scarcity or abundance.[1] Since 2000, the Kentucky Division of Forestry has been collecting price data for logs delivered to mills.[2]

Sawlogs account for about 80 percent of the state's total roundwood products.[3] Price patterns of hardwood sawlog demand vary by species and grade. In general, the demand for the industrial applications of roundwood such as pallets and crates has been declining. This trend may be influenced by increases in the recycling of pallets, the largest industrial use of hardwood lumber, and the introduction of substitute shipping platforms.[4] The combined effect of weakening export markets and surging imports has also put downward pressure on paper and wood product prices.

The highest current mill prices in Kentucky for delivered sawlogs have been consistently realized in the eastern and northeastern regions of the state. Statewide trends reveal a steady decline in mill prices for sawlogs. For example, average white oak prices dropped 31 percent between 2001 and 2003. Average red oak prices have declined somewhat, dropping 17 percent between 2001 and 2003, while yellow-poplar fell 24 percent during this time period. Pulpwood log prices have remained steady during 2000-2003 at about $18 a ton for hardwoods and rising slightly at $24 a ton for softwoods.

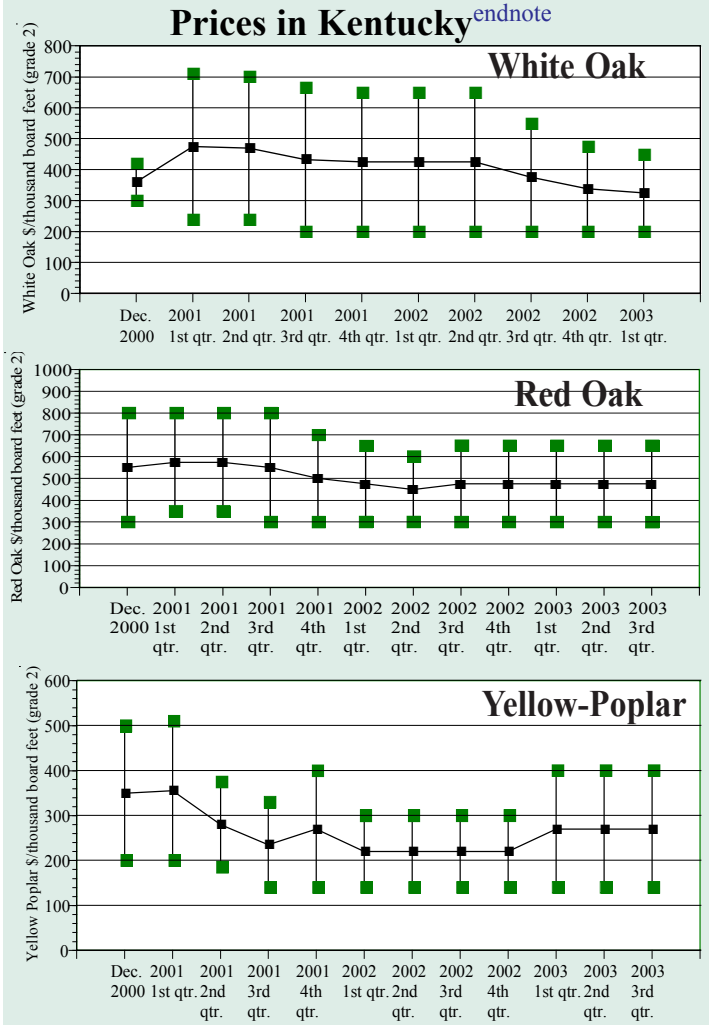
The prices for veneer logs have remained steady in Kentucky. Veneer logs are used primarily to produce furniture, panels, architectural woodworking and flooring for the U.S. and export market. Their prices generally exceed those for high-quality sawlogs. During 2003, walnut, cherry, hard maple and white and red oak were the top veneer logs based on prices reported by 17 companies in Kentucky. Prices ranged from $650 to $8,000 per 1,000 board feet based on the species and log grade.

Measure 8. Snapshot of Veneer Log Price Ranges (2003) endnote

Veneer logs	East Ky.	Northeast Ky.	Central Ky.	West Ky.
walnut	$3000-4000	$2000-8000	nr	nr
cherry	$4000	$2000-8000	nr	nr
hard maple	$3000	$1000-3000	nr	nr
white oak	$2500-3000	$1000-5000	$650-3000	$650-1200
red oak	$1200	$800-1500	$700-800	$700-800

nr- none reported. Prices per thousand board feet as estimated by doyle log rule.

Measure 7. Average Sawlog Delivered Mill Prices in Kentucky endnote



Data presented as maximum, median and minimum mill prices paid.




Measure 9. Primary and Secondary Wood Products Industry in Kentucky
Measure 10. Wood Product, Paper and Pulp Economic Trends

The United States is the largest producer of industrial timber in the world. The main components of Kentucky's forest industry are:

Primary wood industries -- establishments engaged in sawing logs into lumber and similar products, making a diverse range of wood products such as veneers, plywood, reconstituted wood panel products, engineered wood assemblies, millwork and pallets.

Secondary wood industries -- a wide group of value-added segments, including kitchen cabinets, wood containers, prefabricated buildings and structural wood members.

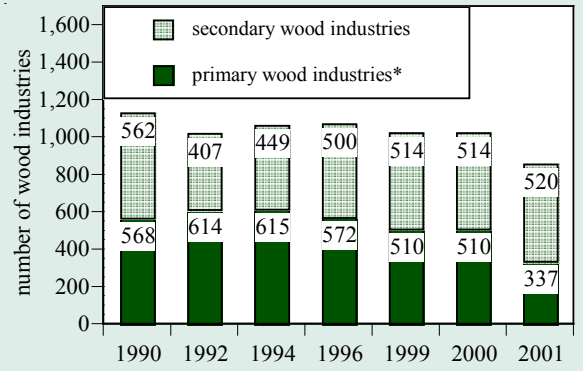
The lumber and wood product sector in Kentucky contributed 0.59 percent of the state total gross product in 2001 and 7.6 percent of the state's total manufacturing workforce. However, this contribution does not fully illustrate how important wood industry-related jobs are to local economies in the state. For example, the lumber and furniture manufacturing industry provides 77 percent of the manufacturing employment in Perry County, 66 percent in Lewis County and 53 percent in Clay County.[1]

The primary wood industry in Kentucky was hard hit by the 2001 recession, losing some 173 firms between 2000 and 2001. The employment outlook for forestry and manufacturing occupations follows this trend. Between 2000 and 2010, the number of individuals employed in the forestry subsector in Kentucky is expected to decline by 6.6 percent.[2]

The secondary wood industry has fared better with an increase in the number of firms over the past few years. The outlook for secondary markets is mixed as the United States continues to lose its market share for furniture and other wood products. In addition, movement toward cheaper wood alternatives and recyclables, as well as paperless offices will impact growth of the secondary wood industry.

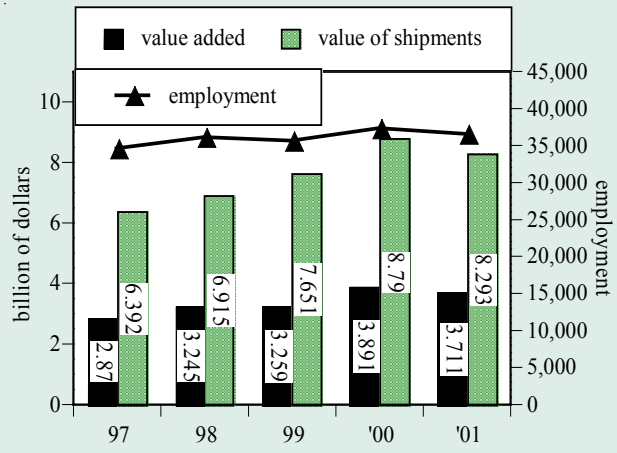
Industry efforts to promote sustainable forests through a certification program are underway throughout the nation. In 1994, the American Forest and Paper Association created the Sustainable Forestry Initiative (SFI®) to promote proper forest management. An on-product labeling program provides information to consumers that the product was produced in accordance with sustainable practice standards. There are currently over 136 million acres of forestland in North America enrolled in the SFI® program, making it among the world's largest sustainable forestry programs. In Kentucky, the SFI® is managed by the Kentucky Forest Industries Association (KFIA). SFI members active in Kentucky are MeadWestvaco, Weyerhaeuser (which includes the old Willamette plant at Hawesville and Trus Joist in Hazard) and Georgia Pacific. The KFIA Board has adopted the Sustainable Forestry Guidelines for all members and recommends adherence on a voluntary basis similar to the National Hardwood Lumber Association.

Measure 9. Primary and Secondary Wood Products Industry in Kentucky endnote



**Includes pallet manufacturers.*

Measure 10. Wood Product, Paper and Pulp Economic Trends in Kentucky endnote






Forest Industry

Measure 11. Kentucky Forest Conservation Act Inspection/Enforcement Actions

In addition to the value of timber and other wood products, forestlands are also a source of value in terms of clean and abundant water, reduced flooding and habitat for a variety of plants, animals, birds and insects, all of which are valuable to our ecological diversity.

State efforts to ensure the protection of water quality from logging practices resulted in the passage of the Kentucky Forest Conservation Act in 1998. The act provides loggers with four opportunities to correct erosion and other environmental problems associated with harvesting operations. As of Feb. 16, 2004, the Ky. Division of Forestry had:

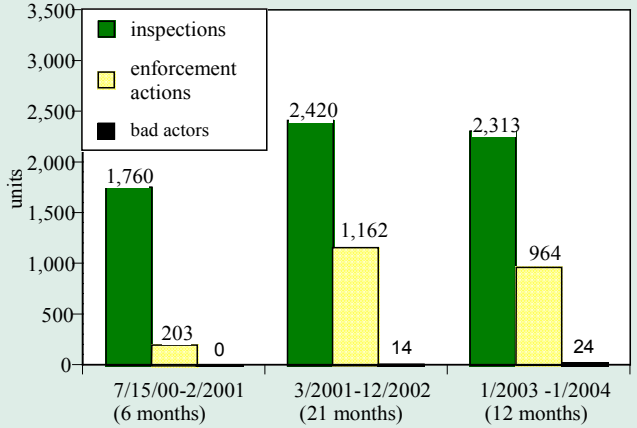
- Inspected 6,493 logging operations,
- Taken 2,329 enforcement actions (1,326 written warnings, 493 informal conferences, 264 notices of violations, 167 special orders and 79 emergency orders).
- Designated 38 owners/operators as bad actors.
  Assessed $99,013 in penalties against 68 operations.

During 2003, the Division of Forestry conducted 5,995 inspections resulting in 684 enforcement actions in 85 of the state's 120 counties. Martin County led the state with 62 enforcement actions, followed by Madison (58), Pike (49), Leslie (33), Floyd (32) and Breathitt (31).

The Forest Conservation Act also requires every commercial logging operation to have a master logger on-site and in charge at all times. The Kentucky Division of Forestry, along with University of Kentucky Department of Forestry and the Kentucky Forest Industries Association, provides the leadership, direction and instruction for the Master Logger program. The program was established to train loggers regarding Best Management Practices (BMPs) for logging, forest ecology, chainsaw safety, personal protective equipment and directional felling techniques. As of January 2004, 5,444 loggers have graduated from the master logger program.[1]

People wanting to maintain their designation as a Kentucky Master Logger must complete six hours of continuing education over a three-year period following the issuance of their designation card. As of January 23, 2004, approximately 1,933 individuals allowed their Master Logger status to lapse by not obtaining their continuing education credits and/or turning in a renewal form with the $25 fee. As of January 2004, there were 3,506 certified active Kentucky Master Loggers.[2]

Measure 11. Kentucky Forest Conservation Act Inspection and Enforcement Actions endnote



Click icon for inspection and enforcement ctions by county

Click icon for a listing of loggers listed as bad actors.




Measure 12. Forest Stewardship Plans
Measure 13. Tree Planting and Reforestation

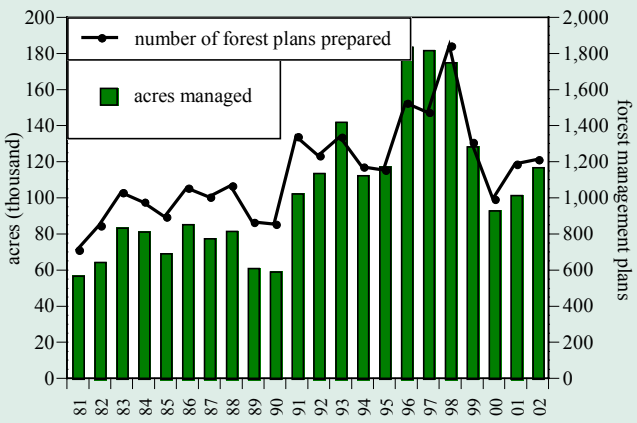
Experts agree that managing forests in a sustainable manner will require a strong program of landowner assistance and education. There are more than 306,900 private forestland owners in Kentucky. These landowners own about 93 percent of the 12.7 million acres of forestland in the state. The average woodland tract is 30.4 acres.

An indicator that can be used to track forest stewardship and management is the number of forest plans prepared by the Kentucky Division of Forestry. The preparation of forest stewardship plans is one of the most requested services by landowners. Between 1981 and 2003, the Division and its cooperators worked with landowners to prepare 26,189 forest plans covering 2.34 million acres of forestland. This represents 20.5 percent of the 11.8 million acres of private forestland in the state. The decline in forest stewardship plans after 1998 is attributed to a number issues including intensive fire seasons, staff turnover and fewer landowners requesting services.

The Kentucky Division of Forestry provides general assistance to landowners to support their forest stewardship plan. Landowners now have access to cost-share funds to assist with forest management. In 2003, the federal Forest Land Enhancement Program was created under the 2002 Farm Bill. The program allows the state more flexibility in providing private nonindustrial forest landowners a means of managing their forest resources for diverse purposes. Kentucky received $558,841 in federal grant funds, of which $316,352.12 is available to landowners for forestry practices. The Kentucky Division of Forestry began taking applications in Oct. 2003. Eligible practices include reforestation, timber stand improvement, soil and water protection, riparian area protection, wildlife habitat improvement and control of invasive and exotic species. Cost-share is 75 percent of the actual cost, not to exceed a predetermined maximum. A forest stewardship plan is a prerequisite for participation in the cost-share program.

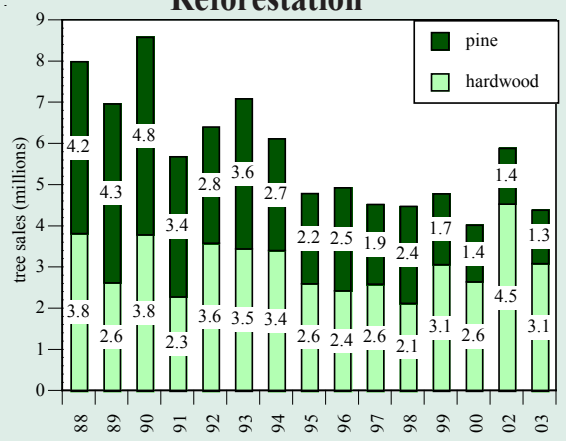
Trends also reveal a significant increase in the sale of hardwood tree seedlings from the state-owned tree nurseries during 2002. The increase is attributed to continuing efforts to promote forestland as a coal mining reclamation land use. Currently, about 65 percent of acreage permitted (or 63 percent of the permits issued) is now being replanted to forests and trees, according to state surface mining officials. This is a 15 percent increase in acreage replanted to trees since 2000. A number of other cost-share programs, such as the Environmental Quality Incentives Program administered by the U.S. Department of Agriculture's Natural Resources Conservation Service have placed more importance of trees in reestablishing riparian buffers and filter strips for erosion control and improving water quality and wildlife habitat. Tree plantings are also being encouraged as part of the national Global Climate Change Program. The program promotes reforestation as an opportunity to reduce the harmful effects of carbon dioxide in the atmosphere. Vigorous growing forests naturally remove carbon and sequester it into forest biomass. Recently, American Electric Power entered into a partnership with the Kentucky Division of Forestry to plant 174,500 tree seedlings on 400 acres of the Green River State Forest in exchange for rights to any potential carbon sequestration credits under the Global Climate Change Program.

Measure 12. Forest Stewardship Plans in Kentucky endnote



Click here for number of forest plans by county

Measure 13. Tree Planting and Reforestation endnote



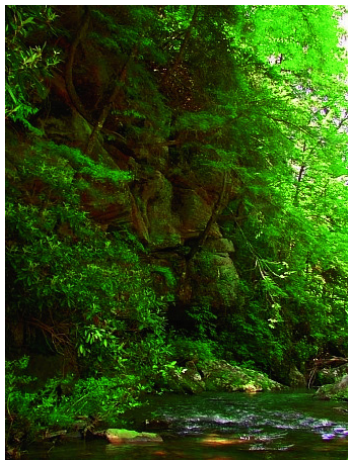



Measure 14. Logging Trends on Public Forestlands in Kentucky

Public forestlands make up about 896,622 acres or 2 percent of Kentucky's land base, according to 1988 U.S. Forest Service data. These public forests support a wealth of biological diversity and contribute significantly to the state's $8.7 billion tourism industry.[1]

The Daniel Boone National Forest (DBNF) is the largest block of publicly owned lands in Kentucky, covering 702,000 acres within 21 eastern Kentucky counties, up 6,600 acres since 2000. The Land Between the Lakes National Recreation Area (LBL) encompasses 170,000 acres in western Kentucky and Tennessee. Other public forests include the Mammoth Cave National Park, five state forests (36,000 acres), 40 state nature preserves, 33 wildlife management areas and the Big South Fork National River and Recreation Area.

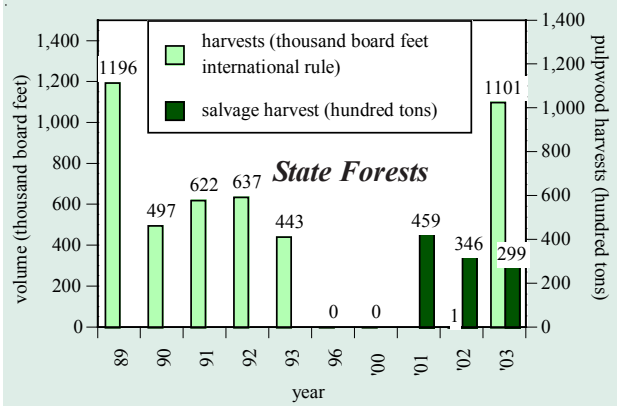
Timber harvests on the five state forests were suspended in 1996 to conduct inventories and prepare forest management plans. In 2001 through 2003, the state authorized a salvage harvest of 110,462 tons of pulpwood and sawtimber from the Pennyrile State Forest after it was impacted by the southern pine beetle. The Division of Forestry also authorized the sale of 686,783 board feet of white pine from Kentucky Ridge State Forest in 2002 and a minor sale of 850 board feet in 2003. In 2003, the Division also contracted for a harvest of 1.1 million board feet from Tygarts State Forest due to ice storm damage.

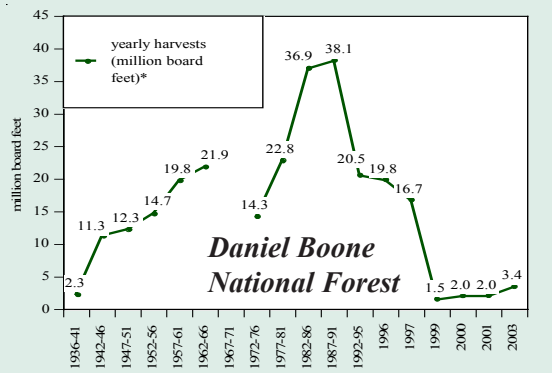


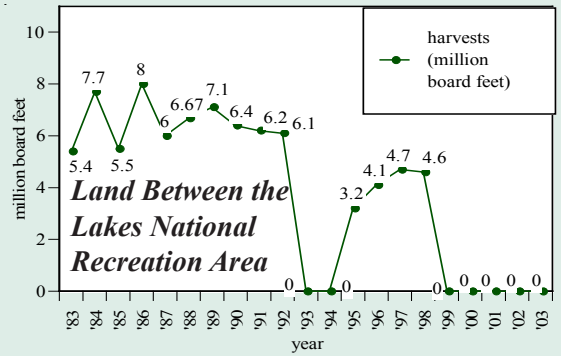
Timber sales on the DBNF reached an all-time high in 1989 at 45.1 million board feet and dropped to their lowest levels in 1999 when 1.5 million board feet were harvested from the forest due to a shift in emphasis on recreation and ecosystem management, as well as lawsuits and appeals challenging timber sales. Harvests increased in 2000 and 2001 to 2 million board feet. The Forest Service released its final revised long-range forest management plan for DBNF in April 2004. The plan identifies 347,800 acres as suitable for timber production and specified the maximum allowable timber harvests at 21.9 million cubic feet for the first 10 years (average yearly harvests of 13.14 million board feet).[1]

The U.S Forest Service assumed management of the LBL in 1999 from the Tennessee Valley Authority. The Forest Service released a draft long-range management plan for LBL in March 2004. The preferred action includes the harvest of an average 3.89 million board feet of timber yearly.[2]

Measure 14. Logging Trends on Public Forestland in Kentucky endnote







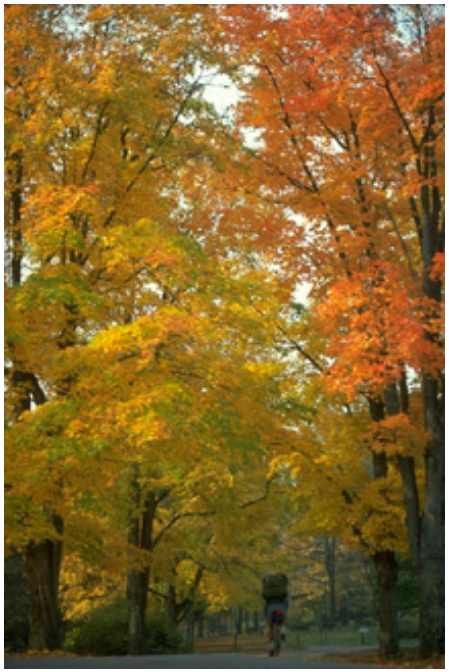
**Based on 4-year averages 1936-1995. 1936-61 are actual average harvest volumes for those years depicted, 1976-93 data represents averages for volume sold under contract, which may not necessarily have been the amount harvested that year. Data not available for 1967-71. 1996 through 2001 actual harvests contracted.*




Measure 15. Urban Forests in Kentucky
Measure 16. Nature Tourism in Kentucky

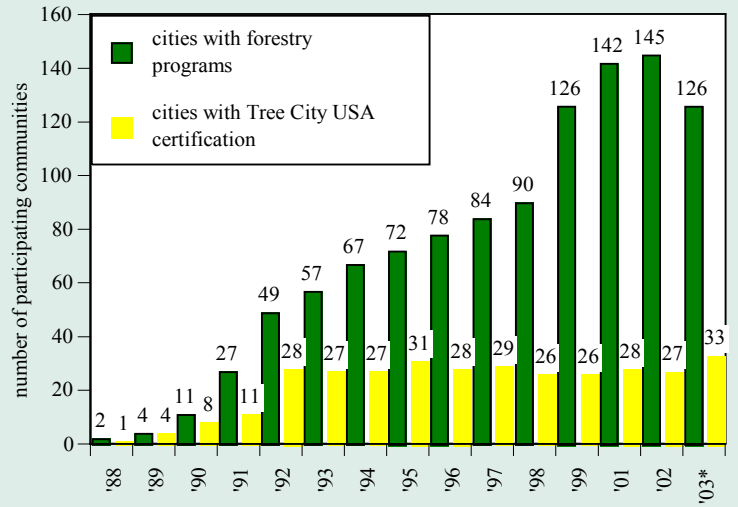
Half of Kentucky's population, some 2.3 million people, now reside in an urban area.[1] As cities grow bigger and faster than ever before, urban forests have become an integral part of building healthy and sustainable communities. Kentucky's Urban and Community Forest Program was created in 1990 to promote conservation and management of forests and develop long-term self-sustaining urban forestry programs. The program promotes local urban forestry programs, tree planting and environmental education initiatives. Since 1990, $4.5 million in federal pass-through funds have been distributed to municipalities, nonprofit organizations and schools across the state in support of urban forestry programs. Local forestry programs now exist in 126 municipalities in Kentucky and another 32 cities have been certified as a Tree City USA.

These urban residents also represent the typical nature tourist, according to the national surveys. Some 1.8 million Kentuckians fished, hunted or watched wildlife in Kentucky during 2001.[1] The economic impact of tourism is significant in Kentucky, topping $9.1 billion in 2002.[2] More than 164,000 Kentuckians are now employed in tourism-related jobs. Tourism remains Kentucky's third-largest revenue-producing industry.



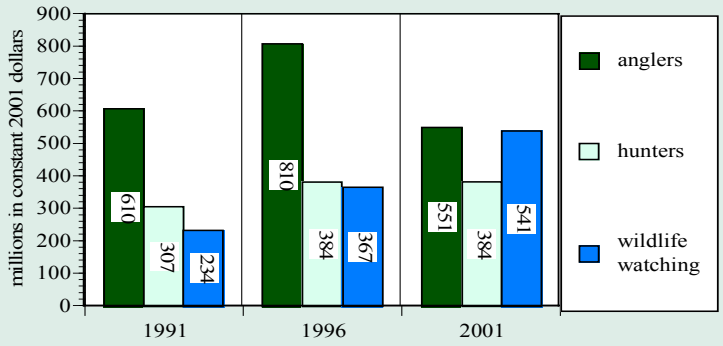
Kentucky's public forests provide the state continuing opportunities to grow its nature tourism industry. For example, in 2001, 2.35 million tourists visited the Daniel Boone National Forest and on average spent $1,292 on outdoor recreation activities, generating $3 billion in revenue.[3] During 2002, 2.04 million people visited the Land Between the Lakes National Recreation Area, which is considered the centerpiece of the region's $600 million tourism industry.[4] In 2001, state residents and nonresidents spent $1.8 billion on wildlife recreation at these and other forests, according to a national survey on wildlife-associated recreation.[5] Kentucky's forests will continue to play a significant role in diversifying local economies by blending both traditional commercial uses of the forest with nature tourism.

Measure 15. Urban Forestry Programs in Kentucky endnote



** U.S. Forest Service changed the definition of how to measure the community's participation level which reduced the number of participating communities in Ky. Click icon for urban forestry programs by county/city*

Measure 16. Nature Tourism in Kentucky endnote






Measure 17. Wildfires in Kentucky

Wildfires are one of the greatest threats to Kentucky's forests. For the past 10 years, the Kentucky Division of Forestry has responded to an average of 1,483 wildfires per year that burned an average of 67,343 acres annually. The Kentucky Division of Forestry provides assistance for wildland fire detection, suppression and law enforcement. Counties are assessed two cents per woodland acre ($224,858 was collected in 2002) to help fund the division's fire suppression efforts. The Division of Forestry also has partnerships with the National Guard, Department of Corrections, Southern Forest Fire Compact and the U.S. Forest Service to supplement its wildfire suppression resources.

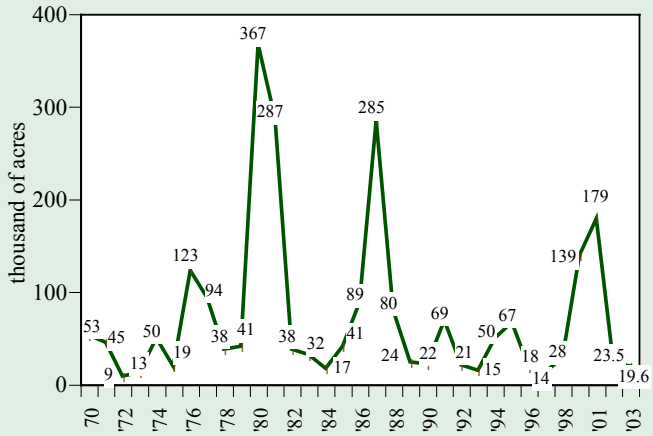
While wildfires occur in every county, the heavily forested eastern region leads the state with most burned acreage. Pike, Floyd and Knott counties lead the state in acres burned during the past 10 years. During the fall of 2001, Kentucky residents in the eastern and southeastern region of the state were battling the worst forest fire season since 1987.

Forest fires burned 178,925 acres of woodlands in 2001. More than 200 National Guard troops and five helicopters were deployed along with 1,500 firefighters from across the nation to help fight forest fires in eastern Kentucky. The 2001 fire season was one of the most costly on record, exceeding $6.3 million. Due to above average rainfall, Kentucky dodged most of the fall wildfire season in 2002 with 976 fires and 2003 with 917 fires.[1]

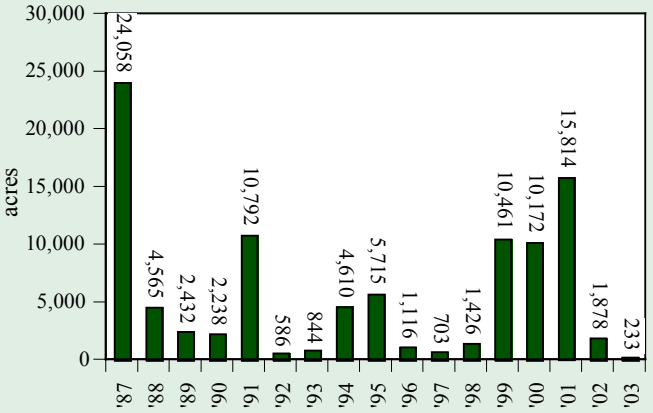
Arson remains the leading cause of forest fires in Kentucky. During 2001, 1,368 forest wildfires burning 146,061 acres were attributed to arson. That year the state prosecuted 63 court cases (39 won/10 lost/14 pending) including a felony conviction in court. The Division of Forestry also collected $18,802 in suppression costs for 116 fires and issued 275 warning notices. Some of these arrests were the result of tips turned in to the state arson hotline or the Division of Forestry. During 2001, 30 tips were received regarding woodland arson. The Kentucky Division of Forestry is also encouraging the establishment of local Firewise Councils to decrease the wildland fire danger to homes, lives and businesses. To date, McCreary and Carter counties have established Firewise Councils.

Not only have the fires threatened and destroyed homes and affected timber and property values, wildfires have contributed to flooding in Kentucky. Flooding caused more than $26 million worth of damages in Kentucky during 2002.[2] The Federal Emergency Management Agency has warned property owners who live near areas burned by wildfires that they face a greater risk of flash floods.

Measure 17. Wildfires in Kentucky endnote



Daniel Boone National Forest



**As responded to by the Ky. Division of Forestry.*
Excludes federal forestland.
Double click icon for acres burned by county.

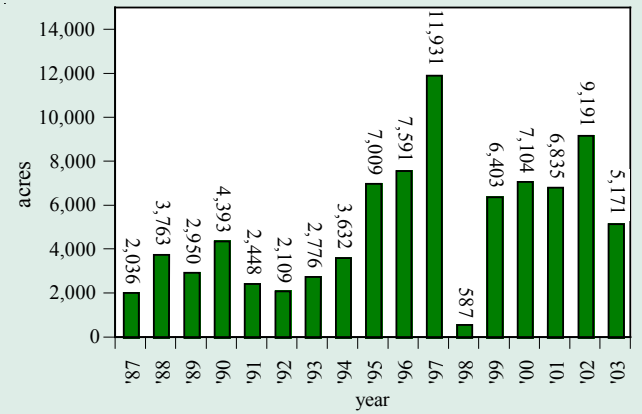



Measure 18. Prescribed Fires in the Daniel Boone National Forest

Kentuckians can expect to see more prescribed fires as state and federal land managers try to combat arson, wildfires and the spread of invasive pests like the southern pine beetle. Prescribed burning involves deliberately setting fires under specific conditions and by trained professionals in forest stands. New federal regulations and a desire to bring back native species are behind the trend.

In 2002, 9,191 acres were prescribed-burned in the Daniel Boone National Forest (DBNF). The 2004 Daniel Boone National Forest Land and Resource Management Plan calls for more controlled fires in the 702,000-acre forest. Over the next decade, prescribed burns are slated to increase as much as 50,000 acres a year. Prescribed fires are being used to restore native grasses and wildflowers and to improve species habitat. Most notably, the red-cockaded woodpecker needs fire to create a mature pine forest necessary for its survival. In 1997, the Forest Service prescribe burned thousands of acres of forestland to improve pine habitat for the endangered woodpecker whose numbers had recently increased to 23. Southern pine beetles killed many of the pine trees which the woodpecker is dependent on for habitat. In response, the remaining endangered woodpeckers in the DBNF were captured and moved to another national forest in 2001.

Measure 18. Prescribed Fires on the Daniel Boone National Forest[endnote]



For the first time, the 53,000 acre Mammoth Cave National Park burned 110 acres of grass and woodland in 2002 to help restore native trees and prairie plants. The Kentucky Division of Forestry also received a $22,000 National Fire Plan grant in 2002 to create the Kentucky Prescribed Fire Task Force to study the need for prescribed fire, educate the public about its benefits and consider state legislative changes that might be needed to encourage prescribed fires. The Task Force worked to get state laws changed in 2003 to allow for more prescribed burning by state agencies and nongovernmental organizations such as the Nature Conservancy. The Task Force is currently working on prescribed fire informational materials. The Kentucky Nature Preserves Commission also reports that is has been using prescribed burns since 1986. Between 1997 and 2003, the commission has burned 35 to 40 acres a year to maintain ecological communities in its nature preserves.

Prescribed Burning in Kentucky's Oak Forests

Prescribed burning involves setting controlled fires in forest stands to reduce undergrowth and promote the growth of trees and other fire-dependent forest plants. For years, prescribed burning has been used successfully for vegetation management in native and plantation pine forests. Periodic low-intensity fire promotes seed germination in pine species and reduces the fuel that can feed wildfires. Without periodic fire, many pine ecosystems would revert to hardwoods.

Even though some managers have started using fire in hardwood-dominated stands, the effects of fire on oak systems are still poorly understood. The few studies that have tested the hypothesis that oak stands could be perpetuated by fire have produced mixed results. U.S. Forest Service scientists with the Southern Research Station and the University of Kentucky Forestry Department recently began a large study in cooperation with the Daniel Boone National Forest in eastern Kentucky, to examine the ecological response of oak-dominated communities to prescribed fire. Funded by a grant from the Joint Fire Sciences Program, the research focuses on how fire affects oaks, their competitors and forest structure. Scientists will also study the effect of fire on the insects that feed on acorns and the relationship of bird nesting success to prescribed fire. Knowledge developed from these studies will guide efforts to apply prescribed fire to oak stands. Source: U.S. Forest Service. http://www.srs.fs.usda.gov/cc/ky.htm




Measure 19. Gypsy Moth Activity in Kentucky
Measure 20. Southern Pine Beetle Outbreak in Kentucky

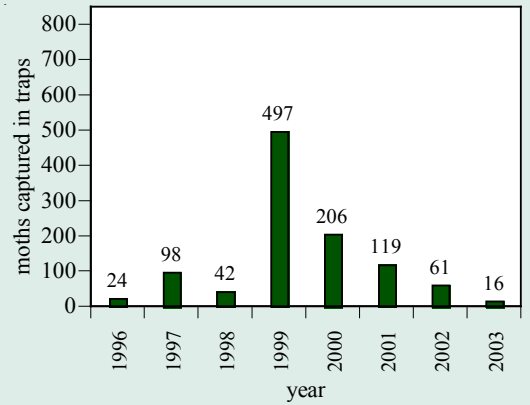
There are many factors that affect forest health, including air pollution, wildfires, poor logging practices and numerous pests and diseases. Nonnative invasive species are a particular problem in Kentucky's forests. The chestnut blight fungus, introduced in the U.S. in the 1940s, all but wiped out this tree species in Kentucky. Butternut canker and Dogwood anthracnose are diseases also threatening the diversity and health of Kentucky's forests. Kentucky forests are also threatened by a number of insect pests, including the southern pine beetle. The twolined chestnut borer is another forest pest causing increased mortality of oaks in Kentucky. Twolined chestnut borers primarily attack oaks that are damaged by drought or trees that are suppressed or declining.

The gypsy moth, *Lymantria dispar Linnaeus*, is one of the most notorious pests of hardwood trees in the northeastern United States. Gypsy moth trapping is conducted by the Kentucky Division of Forestry across the state during late May through June, the time the caterpillars (larvae) are most active in tree defoliation. In 1999, gypsy moth captures peaked and have since been declining. The decline may be attributed to the "Slow the Spread" national project. In Kentucky, the project includes trapping the male moth to determine the path of travel and eliminating the moths before they can become established in the state.

Kentucky faced its most severe outbreak of southern pine beetles in 2000-2001. The southern pine beetle has long been considered the most destructive insect pest of pine throughout the southern United States. Overcrowding of pine stands, combined with the severe drought during the 2000 and 2001, were the main cause of the epidemic. The infestation began in southcentral and southeastern Kentucky, killing an estimated 70,000 acres of pine forests in the Daniel Boone National Forest (DBNF) and another 30,000 on private forestland within the DBNF border. Aerial reconnaissance of the Daniel Boone National Forest revealed that up to 90 percent of the pine stands had been impacted by the beetle. The infestation progressed north and northeast following the state's natural pine range. The pine beetle outbreak began to decline in 2002 due to lack of food and increasing numbers of the beetle's natural predator, the clerid beetle. Aerial surveys revealed pine beetle activity in 54 counties throughout eastern, southeastern, central and southcentral Kentucky. An isolated outbreak of the beetles in the Pennyrile State Forest in Hopkins and Christian counties resulted in the harvesting of 110,462 tons of pulpwood and sawtimber in 2001-2003 to reduce the impact and prevent the beetles from spreading to privately-owned woodlands. No new pine beetle outbreaks were reported in 2003 in Kentucky. The Division of Forestry has now turned its attention to other forest threats such as the emerald ash borer, an exotic species from Asia that feeds on ash trees; the hemlock wooly adelgid that originated in Japan and was introduced into the U.S. in the 1950s; and other exotic species such as bush honeysuckle and kudzu.

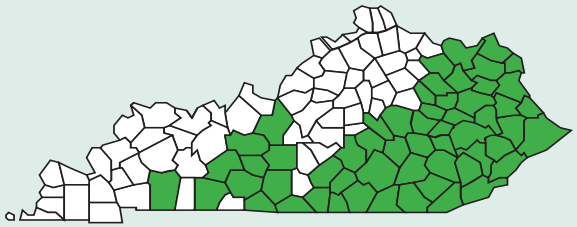
In April 2004, the Kentucky Department of Agriculture asked the U.S. Department of Agriculture to place additional restrictions on nursery plant material coming from California into Kentucky in an effort to ward off Sudden Oak Death (SOD). The pathogen that causes SOD was identified in California in 1995 and is blamed for killing tens of thousands of oak, beech and chestnut trees there. While there are no known cases of SOD in Kentucky, introduction of this pathogen could have a significant impact on the state's forests given that oak trees accounts for 50 to 60 percent of all Kentucky timber revenue. The U.S. Animal and Plant Health Inspection Service (APHIS) has issued a federal quarantine regulating interstate movement of known SOD host plants from California.

Measure 19. Gypsy Moth Activity in Kentucky (moths trapped*) endnote



**Trapping is conducted in 20 to 30 counties across the state each year. Source: Ky. Division of Forestry*

Measure 20. Southern Pine Beetle Outbreak in Kentucky (2000-2002) endnote






Acknowledgments

This report was prepared by Leslie Cole, director with the assistance of Erik Siegel of the Environmental Quality Commission. The commission would like to thank the Kentucky Division of Forestry, the Kentucky Department of Agriculture, the Kentucky Cabinet for Economic Development, the Kentucky Division of Surface Mining, the U.S. Forest Service, the Kentucky Forest Products Industries Association and the University of Kentucky for providing information for this report. EQC would also like to thank the following individuals who reviewed and commented on the report.

* Leah MacSwords, Director, Kentucky Division of Forestry
* Don Girton, Director, Kentucky Woodland Owners Association
* Bob Bauer, Director, Kentucky Forest Industries Association
* Jeff Stringer, Associate Professor, University of Kentucky, Department of Forestry
* Kevin Lawrence, Planning Staff Officer, U.S. Forest Service, Daniel Boone National Forest
* Judith Hallisey, Manager, Environmental Stewardship Department, Land Between the Lakes NRA

The Kentucky Environmental Quality Commission (EQC)
is a seven-member citizen board created under state law with a mission to:

- facilitate public discussion and resolution of environmental issues,
- monitor and report on environmental trends and conditions,
- promote partnerships to improve and protect the environment for future generations, and
- serve as an advisory board to state officials on environmental matters.

EQC Commissioners
Lindell Ormsbee, Chair, Lexington
Betsy Bennett, Vice-Chair, Louisville
Patty Wallace, Louisa
Gary Revlett, Shelbyville
Gordon Garner, Prospect
Gene Zick, Russellville
Laura Knoth, Grand Rivers

Commonwealth of Kentucky

Kentucky's Forests




Spread Sheets

Overview

Forest Industry

Forest Stewardship and Management

Public Forest Land

Forest Fires




End Notes

Introduction - Footnotes Page 2

Forest Land Cover - Measures 1,2 and 3 - Footnotes Page 3

1. US Forest Service, Draft Forest Inventory and Analysis, 2004.

2. US Census, Annual Survey of Manufacturers. Note: The inclusion of the paper and nursery and plantings industry brings the total economic impact up to $5 million.

Charts - notes/sources

Measure 1. Forest Land Cover Trends.

**Forestland is defined as at least 10% stocked trees of any size. Source: U.S. Forest Service, Forest Inventory and Analysis.*

Measure 2. Timberland Trends by Ownership and Measure 3. Timberland Trends by Region.

**Timberland is a subset of forest land that is defined as capable of producing 20 cubic feet per acre/year of industrial wood in natural stands. Source: U.S. Forest Service, Draft Forest Inventory and Analysis, Southern Research Station, 2004.*

Timber Resources and Utilization - Measures 4,5 and 6 - Footnotes Page 4

1. Correspondence with Jeff Stringer, Associate Professor, University of Kentucky, Department of Forestry.

2,3. US Forest Service, Southern Forest Resource Assessment.

4. US Forest Service, Draft Forest Inventory and Analysis, 2004.

Charts - notes/sources

Measure 4. Timber Product Output Trends in Kentucky.

Based on mill outputs of Kentucky timber. Source: U.S. Forest Service TPO surveys.

Measure 5. Lumber Production Trends in Kentucky.

2000 data most recent. Trend data does not take into consideration the increase in efficiency in lumber production. Source: Ky. Division of Forestry

Measure 6. Volume of Growing Stock on Timberland in Kentucky .

Source: Draft RPA 2002 Forest Resource Tables. Updated Oct. 2003. U.S. Forest Service

Timber Resources and Utilization - Measures 7 and 8 - Footnotes Page 5

1. U.S. Forest Service. Southern Forest Resource Assessment.

2. Stumpage price (the price paid for standing timber) may be 50 percent or less than the delivered log price due to harvesting and transportation costs according to the Ky. Department of Agriculture, Statewide Delivered Log Prices.

3. Kentucky Timber Industry, An Assessment of Timber Output and Use, 1999.

4. U.S. Forest Service, Timber Demand in the Southern Appalachians.

Charts - notes/sources

Measure 7. Delivered Log Prices in Kentucky.

Data presented as maximum, median and minimum mill prices paid. Source: Ky. Department of Agriculture.
http://www.kyagr.com/mkt_promo/wood/logprices.htm.




End Notes

Measure 8. Veneer Log Price Ranges (2003)
nr- none reported. Prices per thousand board feet as estimated by doyle log rule.
Source: Ky. Department of Agriculture
http://www.kyagr.com/mkt_promo/wood/logprices.htm

Forest Industry - Measures 9 and 10 - Footnotes Page 6
1. Manufacturing Employment by Industry for Kentucky Counties, 2001.
2. Ky. Cabinet for Workforce Development, Industry Employment Projections.
3. American Forest and Paper Association. http://www.aboutsfi.org/
Charts - notes/sources
Measure 9. Primary and Secondary Wood Products Industry in Kentucky.
**Includes pallet manufacturers. Source: Ky. Division of Forestry*
Measure 10. Wood Product, Paper and Pulp Economic Trends.
Source: U.S. Census, Annual Survey of Manufacturers

Forest Industry - Measure 11 Footnotes Pages 7
1. University of Kentucky. www.masterlogger.org/
2. University of Kentucky. www.masterlogger.org/master/get1.cfm?number=8
Charts - notes/sources
Measure 11. Kentucky Forest Conservation Act Inspection/Enforcement Actions

Forest Stweardship - Measure 12 and 13 - Footnotes Page 8
Charts - notes/sources
Measure 12. Forest Stewardship Plans.
Source: Ky. Division of Forestry
Measure 13. Tree Planting and Reforestation.
Source: Ky. Division of Forestry

Public Forests - Measure 14 - Footnotes Page 9
1. conversion factors between cubic feet and board feet can get complicated becuase they are dependant on such things as size and amount of taper n the bole of trees being measured. EQC used a coversion factor of 6 as suggested by the Daniel Boone National Forest staff. Daniel Boone National Forest Revised Land and Resource Management Plan and Final Environmental Impact Statement http://www.southernregion.fs.fed.us/boone/revplan/newplan.htm
2. US Forest Service, Draft Land and Resource Management Plan for Land Between the Lakes, March 2004.




End Notes

Charts - notes/sources
Measure 14. Logging Trends on Public Forestlands in Kentucky
Source: Ky. Division of Forestry, U.S. Forest Service

Public Forests - Measure 15 and 16 - Footnoes Page 10
1. Economic Research Service, http://www.ers.usda.gov/StateFacts/KY.HTM
2. Kentucky Tourism Cabinet, 2001.
3. National Visitor Use Monitoring Results, August 2003 USDA Forest Service Region 8, DBNF
4. Draft Land and Resource Management Plan for Land Between the Lakes, March 2004.
5. 2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation in Kentucky.
Charts - notes/sources
Measure 15. Urban Forests in Kentucky
Measure 16. Nature Tourism in Kentucky
Source: 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation in Kentucky, Revised March 2003. U.S. Department of Interior, U.S. Wildlife Service, U.S. Dept. of Commerce

Forest Fires - Measure 17- Footnotes Page 11
1. Tom Priddy, meteorologist, University of Kentucky, College of Agriculture.
2. Appalachian Wildfires, floods might be linked. Associated Press. http://www.ktsaf.org/News/General%20News%202002/Appalachia%20wildfires%20-%207-27-02.htm
Charts - notes/sources
Measure 17. Wildfires in Kentucky
Source: Ky. Division of Forestry, Source: U.S. Forest Service

Forest Fires - Measure 18 -Footnoes Page 12
Charts - notes/sources
Measure 18. Prescribed Fires in the Daniel Boone National Forest
Source: U.S. Forest Service.

Forest Health - Measure 19 and 20 Page 13
Charts - notes/sources
Measure 19. Gypsy Moth Activity in Kentucky and Measure 20. Southern Pine Beetle Outbreak in Kentucky.
Source: Ky. Division of Forestry